REMARKS

The foregoing amendment amends claims 1, 5, 6, 7 and 8 and adds claim 9, which corresponds to the subject matter of claim 3. Pending in the application are claims 1-9, of which claims 1, 4, 7, 8 and 9 are independent. The following comments address all stated grounds for rejection and place the presently pending claims, as identified above, in condition for allowance.

Claim 1 is amended to specify that each control device comprises a computer, and that the cooperative control device also comprises a computer.

Claims 5, 6, 7 and 8 are amended for purposes of clarity only, to address the informalities cited by the Examiner.

Amendment of the claims is not to be construed as an acquiescence to any of the objections/rejections set forth in the instant Office Action, and was done solely to expedite prosecution of the application. Applicants reserve the right to pursue the claims as originally filed, or similar claims, in this or one or more subsequent patent applications.

Objections to the Claims

Regarding the objection to claims 5, 6, 7 and 8 for certain informalities, Applicants have amended claims 5, 6, 7 and 8 to address the informalities cited by the Examiner and request that the objections be reconsidered and withdrawn.

35 U.S.C. 102 Rejections

Applicants thank the Examiner for the close review of the claims and for indicating that claim 4 is allowed and that claims 3, 5 and 6 recite patentable subject matter. Applicants traverse the rejection of claims 1, 2 , 7 and 8 under 35 U.S.C. 102 as being anticipated by Gruenwald. The Gruenwald reference does not teach or suggest the claimed vehicle control system including a cooperative control device which *cooperatively operates* a plurality of control devices through a communication line.

The Gruenwald reference is directed to a hybrid electric vehicle including a drive system that can utilize capacitive energy storage devices to convert variable voltage power to fixed

power. The system described in Gruenwald is concerned with allowing for a wide fluctuation in voltage without performance loss or nuisance trip outs. To achieve this, the Gruenwald system includes a power management controller (including vehicle systems controller 14) for controlling the output of an auxiliary power unit (APU) based on an energy level of an ultracapacitor. The vehicle systems controller 14 receives signals from a driver controller to control driving input, which is passed to the APU and a motor controller. Based on the driver controller signals, the APU and the motor controller vary the motor.

The present invention provides a hierarchical control system including a plurality of controllers connected together via a network, whereby a master controller, i.e., the cooperative control device, cooperatively controls the operation of a plurality of subsystems, where each subsystem includes a client controller controlled by the master controller. The cooperative control device calculates control signals for controlling the operation of the client controllers based on signals received from each of the client controllers. The Gruenwald does not teach or suggest such a hierarchical control system. As shown in Figure 1 of the present application, each control device of each subsystem comprises a computer, such as the motor control ECU 122, a reactive gas supply control ECU 123, a cell voltage detective control ECU 124, and an electric power distribution control ECU 125.

According to the Examiner, the vehicle systems controller 14 shown in Figure 4 of the Gruenwald reference is a cooperative control device which cooperative operates a plurality of control devices through a communication line. According to the Examiner, the all accessory drive unit, the air compressor unit and the power steering unit are control devices and the power-steering cooling pumps and the air conditioning shown in Figure 4 are controlled objects connected to the control devices, which are operated by the vehicle systems controller. To support this position Examiner cites the teachings set forth in Column 5, lines 9- Column 6, line 65 and column 4, lines 27-67 of Gruenwald.

Applicants respectfully disagree. After careful consideration of the foregoing passages, it appears that the Gruenwald reference merely discloses that the drive system for a hybrid electric vehicle can include an auxiliary motor and controller in electrical connection with a power unit and an electric energy storage system for driving accessory vehicle components,

which include the air compressor, the power steering, the air conditioner and power-steering cooling pumps. The Gruenwald reference does not teach or suggest that the all accessory drive unit, the air compressor unit and the power steering unit are control devices or that the air conditioner and/or pumps are objects controlled by control devices. Even if the vehicle systems controller can be considered a control device that operates a plurality of control devices, the vehicle systems controller does not *cooperatively* operate the accessory drive unit, the air compressor unit and the power steering unit or any other control devices, as recited in claims 1, 7 and 8.

Furthermore, the Gruenwald reference does not disclose that the accessory drive unit, the air compressor unit and the power steering unit comprise an input/output control device or any device capable of processing signals sent and received between a cooperative control devices and controlled objects.

Moreover, the Gruenwald reference lacks a teaching or suggestion that the vehicle systems controller 14 calculates control signals for controlling the operation of a plurality of control devices based on receipt of signals from the plurality of control devices. Specifically, the vehicle systems controller 14 of Gruenwald does not calculate *control* signals to control the operation of any other control devices or controlled objects in the drive system. Rather, the vehicle systems controller 14 of Gruenwald merely passes on signals indicative of certain parameters to other controllers. The individual controllers then determine the control signals to be applied to an associated object, such as a motor, based on signals, some of which are received from the vehicle systems controller. The vehicle systems controller of Gruenwald does not determine the operation of the controllers or objects connected to the controllers.

The Gruenwald reference also does not teach or suggest a plurality of subsystems where each subsystem comprises a control device provided with a computer, as recited in amended claim 1. In the present invention, each electronic control device of the plurality of control devices is provided with a *computer* for controlling respective subsystems autonomously and independently. At the same time, a cooperative control device is provided for cooperatively controlling the subsystems together with the individual control devices. The individual control devices calculate and send signals indicative of the status of the corresponding subsystem, and

the cooperative control device, which also comprises a computer, receives and calculates signals and sends signals as operation orders to the respective subsystems. The Gruenwald lacks a teaching or suggestion of a control device provided with a computer.

The present vehicle control system is established in order to connect and control a variety of subsystems and to control the plurality of subsystems cooperatively. According to one embodiment, the claimed control system is established for a fuel cell vehicle, since the fuel cell vehicle comprises a plurality of subsystems that must be cooperatively controlled. While the claims of the present application are not limited to a fuel cell vehicle, since the cooperative control system of the present invention is applicable to many complicated systems, Applicants point out that the present control system is not for controlling a simply hybrid vehicle, as described in Gruenwald and that the system described in Gruenwald would not be capable of cooperatively controlling a plurality of subsystems of a fuel cell vehicle or other complicated system.

Applicants respectfully request that the Examiner further clarify and explain the basis for the conclusion that the Gruenwald reference discloses all of the features of independent claims 1, 7 and 8, since as set forth above, the reference appears to lack a number of claimed features.

Furthermore, the Gruenwald reference does not teach or suggest a vehicle control system that includes a determination device, such as an MPU, that determines whether or not an abnormality has occurred in the transmission and receiving of data, as recited in claims 7 and 8. The Gruenwald reference also does not teach or suggest a cooperative control device that sends and receives data depending on the result of the determination of a determination device, as also recited in claims 7 and 8.

New independent claim 9 corresponds to claim 3, which the Examiner indicated as reciting patentable subject matter, rewritten in independent form. As recognized by the Examiner, the cited references do not teach or suggest a vehicle control system including a plurality of control devices providing an autonomous control device. Therefore, independent claim 9 is in immediate condition for allowance.

CONCLUSION

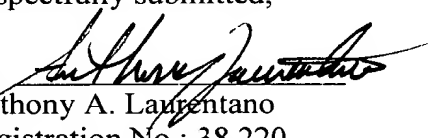
In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. SIW-023 from which the undersigned is authorized to draw.

If there are any remaining issues, we invite a call to the Applicants' representative at the telephone number listed below.

Dated: December 2, 2003

Respectfully submitted,

By 

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